1. (Currently Amended) ~~Method~~ A method for the manufacture of a highly active rubber powder with a ~~specific~~ geometrical surface of 0.4 to 5 m^2/g from scrap ~~tyres~~ tires and vulcanized waste of rubber articles based on different rubber types in an extrusion type apparatus under thermomechanical action comprising reducing the size of scrap tires and/or vulcanized waste of rubber articles to rubber particles by subjecting the scrap tires and/or vulcanized waste of rubber articles to~~, characterized in that the size reduction of vulcanized rubber takes place in two stages: under the conditions of~~ a pulsating volume strain of 15 to 250 MPa increasing at a rate of 5 to 90 MPa/s, with an amplitude +/- 5 to 20 MPa and a frequency of 5 to 600 Hz, as well as with a temperature in the range of 90 to 380°C increasing at a rate of 50 to 150°C/s accompanied by the simultaneous gas saturation of rubber with degradation products of plasticizing agents and other constituents belonging to the rubber composition, their comminution initially ~~takes~~ taking place accompanied by the formation of a porous structure in the volume of the particles, and in the case of a marked volume strain reduction at a rate of 50 to 150 MPa/s, the porous structure is then destroyed, the ~~specific~~ geometrical surface of the rubber particles is increased and the particles are cooled.

2. (Currently Amended) ~~Method~~ The method according to claim 1, ~~characterized in that use is made of~~ wherein the vulcanized waste of rubber articles and scrap ~~tyres~~ tires comprises ~~based on~~ isoprene, butadiene, styrene butadiene, nitrile butadiene rubbers, including hydrogenated carboxylate, ethylene-propylene, fluorine, fluorosilicone, butadiene vinyl pyridine, silicone, epichlorohydrin, polychloroprene, chlorosulphonated, polyisobutylene and acrylate rubbers, as well as mixtures thereof.

3. (Currently Amended) ~~Method~~ The method according to claim 1 wherein ~~or 2, characterized in that~~ for the destruction thereof there is a deformation of vulcanized rubber pieces in the range of 105 to 250% of the limit of the elastic component of rubber deformation, accompanied by a simultaneous temperature reduction at a rate of 70 to 150°C/s.

4. (Currently Amended) ~~Method~~ The method according to claim 1 wherein ~~claims 1 to 3, characterized in that~~ for the ~~marked~~ increase of the ~~specific~~ geometrical surface of the rubber

powder by 15 to 40% homogeneity modifiers are introduced, ~~namely~~ comprising alcohol telomers of the formula $H(CH_2\text{-}CF_2)_n\text{-}CH_2OH$, where n>4, N-nitrosodiphenylamine, N-cyclohexylthiophthalimide in a quantity of 0.1 to 1.9%~~, which makes it possible to increase the capacity of the installation by 10 to 55% and the powder storage time up to 6 to 9 months, whilst avoiding caking during transportation~~.

5. (Currently Amended) ~~Method~~ The method according to claim 1 wherein ~~claims 1 to 4, characterized in that~~ for the manufacture of a highly active rubber from rubber waste, whose composition lacks constituents degradable at high temperatures, ~~modifiers –~~ alcohol telomers, sulphenamide M, sulphenamide Z, stearic, oleic, citric and oxalic acid – are introduced in a quantity of 0.2 to 5.0%, combined with rubbers and form volatile substances at a temperature of 70 to 120°C.

6. (Currently Amended) ~~Method~~ The method according to claim 1 wherein ~~claims 1 to 5, characterized in that~~ for the manufacture of mixed thermoelastoplastics there is a ~~joint~~ size reduction of waste of rubber articles and waste of thermoplastics and/or thermoelastoplastics, comprising ~~namely~~ polyethylenes, polypropylenes, polyvinyl chlorides, polyethylene terephthalates, styrene-butadiene block copolymers~~, etc~~.

7. (Currently Amended) ~~Apparatus~~ An apparatus for the manufacture of highly active rubber powders from scrap ~~tyers~~ tires and waste of rubber articles, which ~~has~~ comprises a cylindrical casing ~~(1) provided with~~ having a charging connection ~~(2)~~ and a discharging connection ~~(3)~~ and within which are formed a compacting and size reducing zone, which ~~in~~ each ~~case~~ have a compacting worm ~~(6)~~ with a reduction in the depth of ~~the~~ grooves between ~~the~~ combs decreasing in the direction of the size reducing zone and an activator ~~(4)~~ in the form of a rotating body, on whose outer working surface slots are formed, the two ~~elements are~~ compacting worms being mounted in rotary manner coaxial relative to the casing inner surface accompanied by the formation of an annular clearance with the latter, the casing, the compacting worm ~~(6)~~ and the activator ~~(4)~~ being provided with cooling elements ~~(10)~~, ~~characterized in that there are~~ comprising two size reducing zones, the first size reducing zone being formed by a multistart

compacting worm ~~(6)~~ with an interturn gap volume decreasing in the direction of the discharge connection ~~(3)~~ and the casing surrounding the same, whose inner surface is formed in the compacting area by a conical opening inclined in the direction of the discharge connection ~~(3)~~ and 3 to 6 ribs with a rectangular cross-section engaging in the interior, where in the first size reducing ~~area~~ zone the casing inner surface is formed by a cylindrical opening having a diameter which is 1.003 to 1.02 times larger than the diameter of the compacting worm ~~(6)~~ and into the casing inner surface are incorporated with a starting cut pitch 0.5 to 1.5 times the starting cut pitch of the compacting worm ~~(6)~~ helical notches in multistart form with 3 to 50 starts and a constant depth in the straight and/or reverse direction and where ~~the~~ a ratio of the extensions of the compacting area and the first size reducing area along the rotation axis of the worm is in the range 1:0.5 ~~or~~ to 0.5:1, ~~in addition~~ said compacting and size reducing zones are formed on replaceable, detachable sleeves ~~(9)~~, which are mountable on ~~the~~ a shaft or on the casing ~~(1)~~ and have on one side of the sleeve ~~(9)~~ said working surfaces and on the other side the helical grooves with an increased surface of the walls for pumping a cooling element ~~(10)~~, the second size reducing zone being formed by an activator ~~(4)~~ in the form of a rotating body and a discharge worm ~~(5)~~ rigidly connected thereto and fitted in aligned manner with the compacting worm ~~(6)~~, as well as a cylindrical casing surrounding the two means, ~~whilst~~ while in the outer surface of the activator ~~(4)~~ are incorporated with a pitch which is 1.1 to 2.5 times greater than the starting cut pitch of the compacting worm ~~(6)~~ multistart, helical notches with a constant depth in the straight and reverse directions with the same pitch and the same number of starts, on the outer surface of the discharge worm ~~(5)~~ are formed multistart, helical combs in ~~the~~ a straight direction with a pitch 1.15 to 3.0 times greater than the starting cut pitch of the compacting worm ~~(6)~~ with an interturn gap increasing in the direction of the discharge connection ~~(3)~~, the combs of the worm being constructed continuously or are interrupted by helical notches in the reverse direction with a pitch equal to the starting cut pitch of the combs, that the cylindrical casing inner surface surrounding the activator ~~(4)~~ and the discharge worm ~~(5)~~ is provided with multistart, helical notches constructed with a pitch of 0.5 to 1.5 times smaller than the starting cut pitch of the notches on the activator ~~(4)~~ and the combs of the discharge worm ~~(5)~~ in the straight and reverse directions, the ratio of the extensions of the activator ~~(4)~~ and the discharge worm ~~(5)~~ along the rotation axis being in the range of 0.2:1 to 1:0.3 said working surfaces of the activator ~~(4)~~, the

discharge worm ~~(5)~~ and the casing on the replaceable sleeves ~~(9)~~ on one side and on the other side are cut helical channels with a larger surface area of the walls for pumping the cooling medium, the multistart, helical notches being constructed with a semicircular profile with a radius which is 0.005 to 0.03 times the worm diameter and a depth which is 5 to 15% smaller than the radius, and the ratio of the number of notches in the straight and reverse directions being in the range of 0.3:1.0 to 1.0:0.3.

8. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 7, wherein ~~characterized in that~~ the detachable sleeves ~~(9)~~ of the casing ~~(1)~~ and the shaft are constructed in one or more parts.

9. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 7 wherein ~~or 8~~, ~~characterized in that~~ the casing ~~(1)~~ is constructed in the form of one or more parts.

10. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 7 wherein ~~one of the claims 7 to 9, characterized in that~~ the annular clearance between the activator ~~(4)~~ and the discharge worm ~~(5)~~ and the casing inner surface is 1.4 to 2.5 times and the depth of the multistart notches on the casing ~~(1)~~ and activator ~~(4)~~ are 2.0 to 4.5 times larger than the annular clearance between the compacting worm ~~(6)~~ and the casing inner surface.

11. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 7 wherein ~~one of the claims 7 to 10, characterized in that~~ the ratio of the extensions of the first and second size reducing zones along the rotation axis is in the range of 0.5 to 1.2.

12. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 7 wherein ~~one of the claims 1 to 11, characterized in that~~ the working surfaces of the removable sleeves ~~(9)~~ of the casing ~~(1)~~ and the shaft ~~are~~ have been treated with materials containing tungsten, chromium, nickel, boron, molybdenum, as well as carbides and nitrides of very high melting point metals, in the presence of fluoroorganic substances.